

MCNS

MARINE CASUALTY NARRATIVE SUPPLEMENT

05APR01

CASE/ MC00009511 PORT/ GEMS SUBJECT/ M/V LEON I PERSON INJURY DEAT DATE/ 29JUL00

--- COMMENTS ---
Comments & Conclusions

1. The proximate cause of this casualty was the failure of the luffing wire on crane #4 and the resulting fall of the crane's jib. The limit switch controlling the maximum angle of the jib was not properly set and allowed the jib to exceed the recommended maximum angle and contact the mechanical stops. The luffing wire experienced tensile forces as the luffing motor continued to try and hoist the jib when it was physically restrained by the mechanical stops. Though the motor does not appear to have been hoisting when the wire failed, these static forces exceeded the luffing wire's breaking strength in the area of the pre-existing damage, causing the wire to part.
2. Even though the master and crew followed all necessary safety precautions (hard hats, safety lines, supervisor tending basket, etc.) and relevant shipboard procedures for going aloft, regardless of the precautions taken, this type of work is inherently dangerous and, in this case, two lives were lost. Therefore, the actions of the master can be considered a causal factor in that his decision to send the men aloft created the potential for the mishap. Applying the Generic Error Modeling System framework to the intentional decision of the master to send the men aloft to perform a task which could otherwise be performed from the main deck, the master's decision is viewed as a planning error and is considered a Rule-Based mistake. Specifically, the master had applied an inadvisable rule: if there is sugar on the hatch coamings, then hoist crew members in a workbasket and scrape the sugar off. This classification is supported by the Fleet Safety Officer's decision to revise the vessel's procedures for working aloft to restrict its use to "only when necessary."
3. Another contributing unsafe act was the bosun's decision to rely upon the limit switch to prevent the jib from exceeding the maximum angle. This intentional act allowed the jib to exceed the maximum recommended angle and become "two-blocked" and is an adaptation. He understood he needed to ensure the maximum angle was not exceeded, but due to the design of the crane, he could not see the jib at the higher angles of operation and, therefore, relied on the limit switch.
4. Coast Guard investigating officers believe human error likely contributed to other aspects of this casualty. However, with the exception of the decisions of the master and bosun discussed above, the facts and evidence gathered do not clearly identify the other unsafe acts and decisions which contributed to this casualty. The most probable place for additional human error was in the shipyard during the installation, inspection, and testing of the cranes. Without more evidence and facts surrounding the history of these cranes and the work completed in the shipyard, it is difficult to quantify and categorize the human role and apply the Generic Error Modeling System (GEMS) to these factors.

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5. Three latent unsafe conditions, which allowed this casualty to occur, were identified:

- a. The luffing wire on crane #4 had was damaged and weakened prior to the casualty.
- b. The design of the crane does not allow the crane operator to monitor the jib at higher angles of operation.
- c. At the time of the casualty, the vessel's operating procedures gave the master no guidance to help define the circumstances that justify the risk of sending crew members aloft.

Recommendations

1. The cranes and/or standing operating procedures on board the M/V LEON I should be modified to ensure the crane operator always has a clear, reliable, and visual indication of the jib angle at all angles of operation.

2. Although it is recognized they cannot be eliminated, all vessel operators should be encouraged to restrict operations requiring crewmembers to work aloft. If it cannot be avoided and crewmembers must go aloft, vessel operators should operationally test and exercise the crane before hoisting personnel. Although it is applicable only for work at construction sites and does not apply to shipboard operations, regulation 29 CFR 1926.550(g)(5) (enclosure (58)) requires a trial lift, inspection and proof testing of any crane or derrick before suspending personnel in a platform. Among other things, this regulation specifically requires a trial lift be performed with the unoccupied personnel platform loaded at least to the anticipated liftweight. During the trial lift, the unoccupied platform must be maneuvered into each location the platform will be hoisted and positioned with personnel on the platform. Had guidelines such as these been in place and followed, it is possible the luffing wire would have failed during the testing, before any crewmembers were hoisted.

3. In addition to periodic operational testing, classification societies and vessel operators should be encouraged to employ qualified individuals to verify the setting, in accordance with manufacturer recommendations, of all safeties and limiting devices on lifting appliances.

4. Classification societies and vessel operators should be reminded to be vigilant in their duties to periodically inspect all running wire ropes.

5. As they perform their inspections and certifications and evaluate the suitability of designs, equipment and "systems", classification societies and vessel operators should place themselves in the position of the mariner, anticipate how the mariner uses the equipment or system to complete his assigned task, and consider the worst case scenario. With the true meaning and intent of the rules and regulations in mind, they must be cognizant of the mariners' work environment and strive to identify and correct latent unsafe conditions, such as obvious design flaws, ineffective alarms and warning signals, and poor or inadequate practices, procedures or instructions.